Historic Summary of the Environmental Restoration Activities at Lawrence Livermore National Laboratory Livermore Site

Environmental Restoration Division, Lawrence Livermore National Laboratory
P.O. Box 808, L-544, Livermore, CA 94551, USA – Phone: (925) 422-4635

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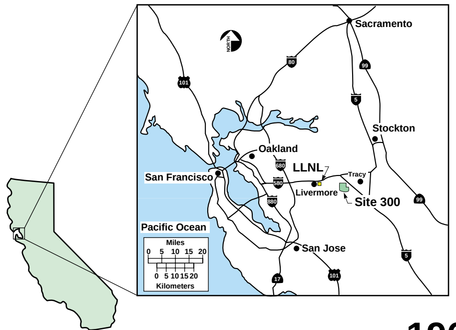
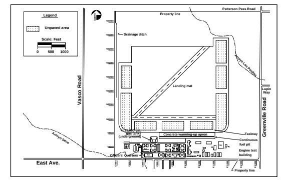
Major Accomplishments

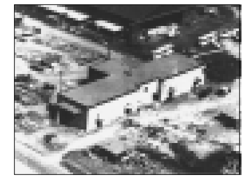
1. Pre-CERCLA activities conducted to reduce potential worker risk and further releases to the environment.
2. Completed RI/FS process, first DOE CERCLA Record of Decision—Pump and Treat to prevent ground water migration toward the City of Livermore.
3. First application of Dynamic Underground Stripping (DUS) technology removed over 7,000 gallons of fuel in less than one year at a former fuel spill site. No Further Action declared at the site.
4. Achieved hydraulic capture of plume at the western site boundary significantly reducing potential risk to public.
5. Reduced capital costs by $9 million through the development and implementation of Portable Treatment Units vs. Fixed Treatment Systems.
6. Enhanced modeling capabilities to permit more accurate and cost-effective placement of wells and maximum contaminant removal.



1940

1942 Livermore Naval Air Station used to train pilots, repair airplane engines





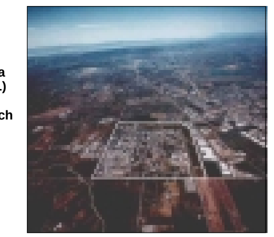
1942-1952 Initial contaminant releases from Navy aircraft maintenance operations

1945

1950

1951 Atomic Energy Commission (AEC) acquires the property

1952 University of California Radiation Laboratory (UCRL) established to conduct weapons and energy research for the US government (photo from early 1990s)



1955

1958 UCRL renamed Ernest O. Lawrence Radiation Laboratory (LRL)

1960

Early 1960s Disposal operations at the East Traffic Circle Landfill

1965

1970

1971 Lawrence Livermore Laboratory established under AEC

1975

1977 AEC reorganized as US Department of Energy (DOE)

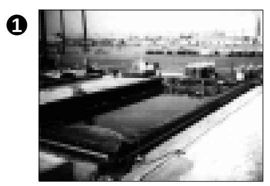
(1) 1978–80 Began initial environmental investigations

1979 Lawrence Livermore National Laboratory established by Congress

1980

(1) 1982 Ground water contaminated with volatile organic compounds (VOCs) found on site

(1)

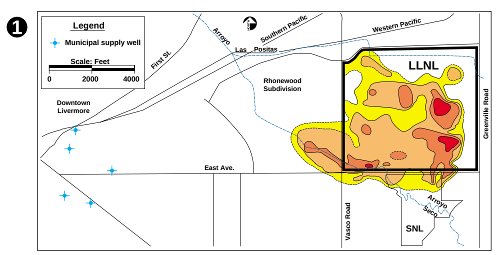


1982 Excavated tritium evaporation ponds

(1)

1982 Discovered leaking drums at East Taxi Strip Landfill

(1)



1983 Discovered ground water contaminated with VOCs off site
- Provided City Water hookups to users of private wells containing VOCs
- Began sealing inappropriately constructed wells immediately downgradient of site

(1)

1984 Completed East Traffic Circle Landfill remedial action

(1)

1984 Excavated leaking capacitors from the East Traffic Circle Landfill

1985

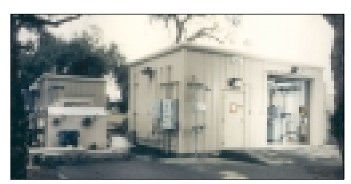
1987 Livermore Site added to CERCLA (Superfund) National Priorities List for VOC contamination of ground water within 3 miles of municipal/private drinking water wells

1989 Initiated capture of off-site VOC plume with installation of Treatment Facility A

1989 FFA

1989 Signed CERCLA (Superfund) Federal Facility Agreement

1989 Creation of DOE's Environmental Management Program



1990 Capture zone expanded at western VOC plume by Pilot Remediation at Treatment Facility B

1990

(2) **1990 RI/FS**

1990 Completed Remedial Investigation/Feasibility Study

(2) **1992 ROD**

1992 Signed CERCLA (Superfund) Record of Decision (ROD), the first DOE site-wide ROD

1992 Developed and applied Cost Effective Sampling Algorithm at Livermore Site to statistically support the reduction of monitor well sampling, resulting in significant cost savings

1993 Began operation of ground water Treatment Facility C (TFC)—expanding western margin VOC plume capture

1993 Completed RCRA incinerator and storage yard closure/removal action

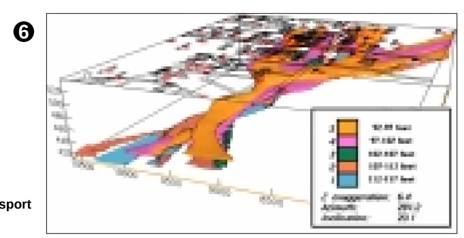
1994 Began ground water extraction and treatment in the interior of the Livermore Site with the startup of operation of Treatment Facility D (TFD)

1995

(4) 1995 Achieved hydraulic control of the western margin and off-site plumes with completion of the TFA and TFB North pipelines and the upgrade of the Arroyo Pipeline

1995 Closed leaking underground tritiated waste water tank

(6)

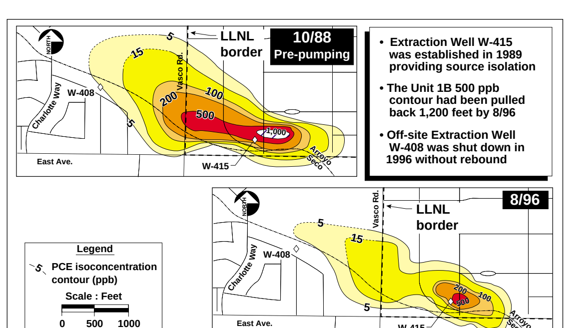


1995 Enhanced fate and transport numerical modeling with LLNL-developed 3D imaging

1996 Contingency Plan (CP) completed

1996 CP

(4)



- Extraction Well W-415 was established in 1989 providing source isolation
- The Unit 1B 500 ppb contour had been pulled back 1,200 feet by 8/96
- Off-site Extraction Well W-408 was shut down in 1996 without rebound

1988–1996 Achieved hydraulic control of western VOC plume

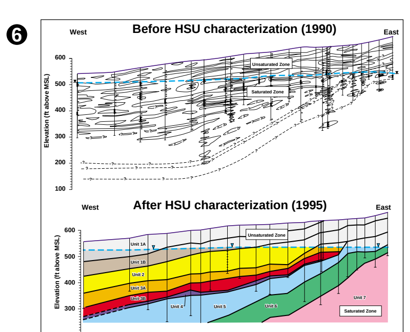
(3)

1992 Removed over 7,000 gallons of free-product gasoline in just a few months at Treatment Facility F (TFF) with Dynamic Underground Stripping Demonstration Project

1995 Closure of vadose zone cleanup granted at TFF

1996 "No Further Action" granted for cleanup of the gasoline impacted ground water at TFF

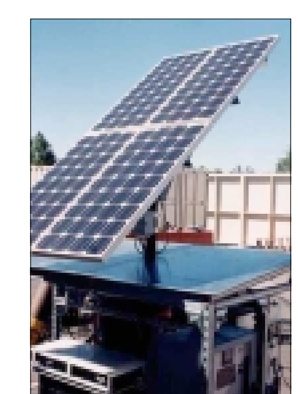
(6)



1995 Applied hydrostratigraphic correlation methods to advance Livermore Site hydrogeologic model

(5)

1996 Fixed facilities give way to Portable Treatment Units



1997 Deployment of LLNL-designed compact solar-powered ground water treatment system